



Food and Agriculture
Organization of the
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Investing in rural people



Kenya



High aquaculture growth needed to improve food security and nutrition

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KEY MESSAGES

- Kenya's food security and nutrition status has much room to improve.
- Fish is a vital source of essential macro- and micronutrients that can play an important role in reducing the high prevalence of undernutrition in Kenya.
- While Africa's average fish share in animal protein intake is above the world average, the fish share for Kenya is only half of the world average.
- Farmed fish production in Kenya would need to reach 150 000 tonnes in 2030 in order to generate enough fish to maintain its already low per capita fish consumption for the growing population, or reach 550 000 tonnes in order to increase its per capita fish consumption to the African average.
- Thanks to various public interventions, Kenya has had an impressive 20 percent annual growth in aquaculture production since the new millennium. Yet deliberate efforts must be made to create an enabling environment for both public and private investments in the industry in order to unleash Kenya's full potential in aquaculture for improving the country's food and nutrition status.



Courtesy of Jonathan Wunguti



FOOD SECURITY AND NUTRITION STATUS

Kenya is a lower-middle-income country, earning USD 1 790 gross national income per capita in 2018,¹ and it is one of the Low-Income Food-Deficit Countries (LIFDC).² In the early 2010s,³ Kenya's 62 g/capita per day overall protein intake (including animal and vegetal protein) was only 89 percent of the African average and 76 percent of the world average.⁴ In the mid-2010s, about one in every three individuals in Kenya was below the "food poverty" line (i.e. lack of financial capacity to maintain food consumption that satisfies adequate

daily calorific requirements);⁵ 24 percent of the population was undernourished; and 26 percent of children under 5 years of age were stunted.⁶ Food-insecure people in Kenya are often vulnerable to malnutrition, and young children and women of reproductive age are the most vulnerable.

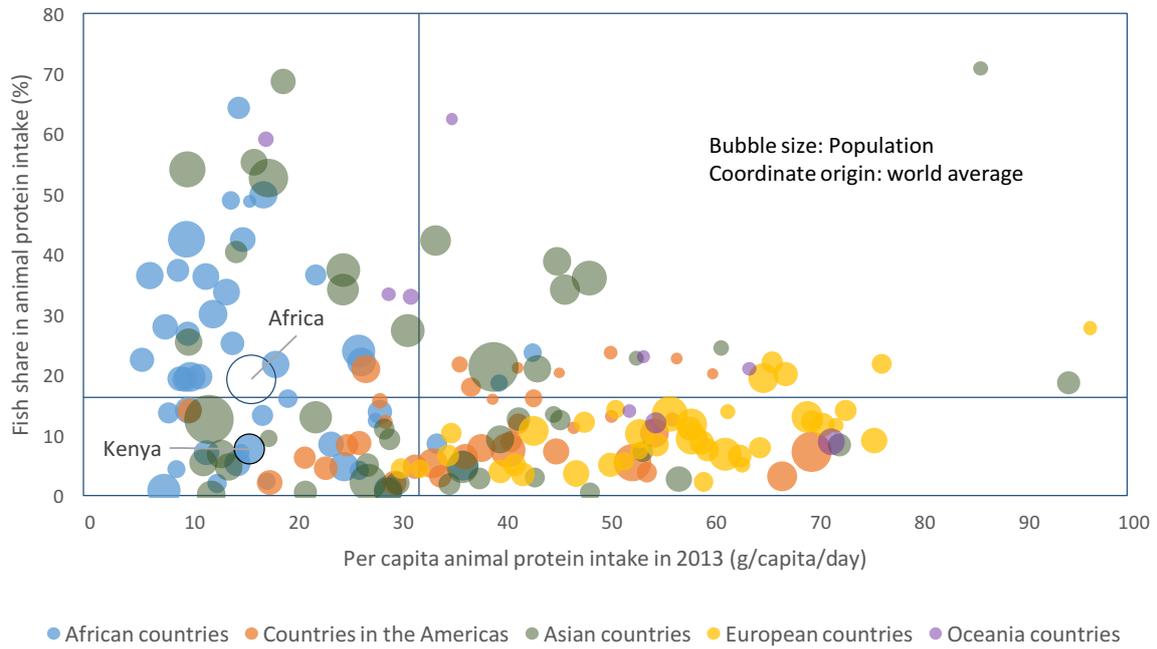
CONTRIBUTION OF FISH TO FOOD AND NUTRITION

Fish (used here to represent a variety of fish and seafood, including finfish, crustaceans, molluscs and miscellaneous aquatic animals) constitute a rich source of essential macro- and micronutrients, and have an important role to play in addressing the coexistence of undernourishment and undernutrition in Kenya. Fish are a source of high-quality protein that contributes to nearly one-fifth of global animal protein intake. Many fish species are also a vital source of high bioavailable micronutrients^{7,8} and omega-3 fatty acids that are important to promoting normal neurodevelopment and visual functions in infants and help reduce the risk of cardiovascular diseases.^{9,10,11}

Similar to most countries in Africa, Kenya has a much lower animal protein intake than the world average (Figure 1). However, while many countries in Africa, as well as Africa as a whole, has a higher fish share in animal protein than the world average (close to 20 percent in the early 2010s),¹² the fish share in Kenya is much lower (less than 10 percent) (Figure 1).

The share of fish in Kenya's animal protein intake declined from 10 percent in the early 1990s to 8 percent in the early 2010s (Figure 2). Milk (i.e. dairy products) accounted for nearly half of the country's animal protein intake, whereas the share of meat was 36 percent (Figure 2).

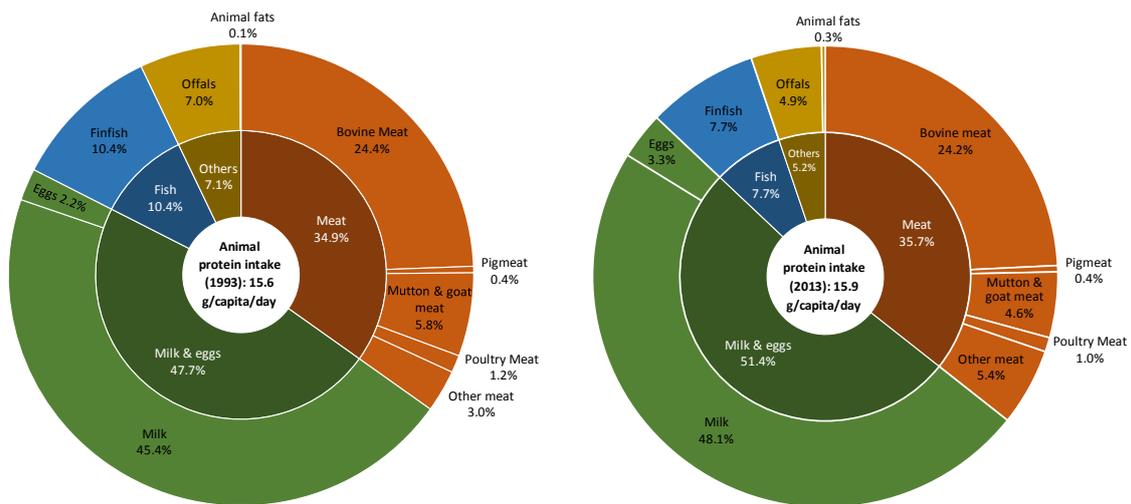
FIGURE 1 – Contribution of fish to animal protein: a global overview



Data source: FAOSTAT Food Balance Sheets (January 2018; www.fao.org/faostat/en/#data/FBS).

Note: Constructed by the FAO WAPI Fish Consumption Module (WAPI-FISHCSP); see Figure 2.5a in WAPI-FISHCSP v.2018.1 for a prototype. www.fao.org/fishery/statistics/software/wapi/en.

FIGURE 2 – Animal protein sources in Kenya: early 1990s versus early 2010s



Data source: FAOSTAT Food Balance Sheets (January 2018; www.fao.org/faostat/en/#data/FBS).

Note: Constructed by the FAO WAPI Fish Consumption Module (WAPI-FISHCSP); see Figure 1.5 in WAPI-FISHCSP v.2018.1 for a prototype. www.fao.org/fishery/statistics/software/wapi/en.

The diminished fish share in Kenya’s animal protein intake between the early 1990s and the early 2010s is reflected in the decline of per capita fish consumption, from 5.5 kg (live weight equivalent)¹³ to 4.0 kg during the period (Figure 3).

As the domestic food fish supply in Kenya declined from nearly 180 000 tonnes in the early 1990s to a little over 120 000 tonnes at the dawn of the new millennium (the early 2000s), the corresponding total fish consumption reduced from around 140 000 tonnes to around 83 000 tonnes, and per capita fish consumption declined from 5.5 kg to 2.4 kg (Figure 3).

When the fish supply rebounded back to nearly 190 000 tonnes in the early 2010s, higher than the level in the early 1990s, per capita fish consumption only grew back to 4.0 kg, lower than the early 1990s level (Figure 3). This is because the 0.1 percent annual growth of Kenya’s fish production between the early 1990s and the early 2010s could not catch up with the country’s 2.8 percent population growth during the period.

FIGURE 3 – Food fish supply and utilization in Kenya during 1993–2013



Data source: FAO Food Balance Sheets of fish and fishery products, 1961–2013, published through FishStatJ (November 2017; www.fao.org/fishery/statistics/software/fishstatj/en).

Note: Constructed by the FAO WAPI Fish Consumption Module (WAPI-FISHCSP); see Figure 5.2 in WAPI-FISHCSP v.2018.1 for a prototype. www.fao.org/fishery/statistics/software/wapi/en.



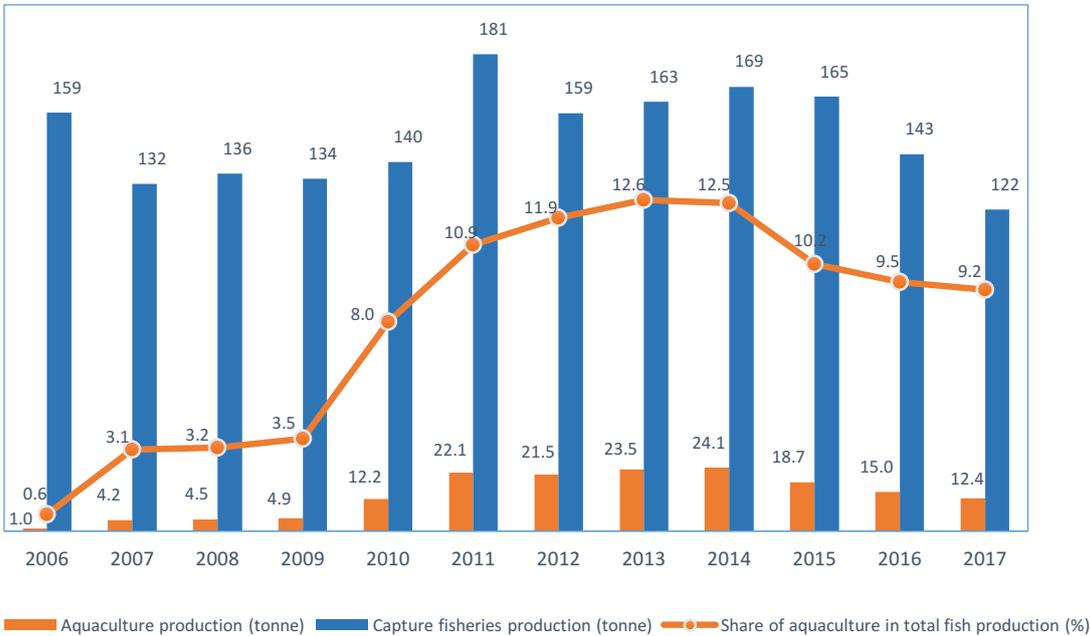
AQUACULTURE’S CONTRIBUTION TO FISH PRODUCTION

The downward trend of the domestic food fish supply in Kenya between the early 1990s and the early 2000s (Figure 3) was primarily caused by the decline in the country’s capture fisheries production, whereas aquaculture had little contribution to the country’s fish production (less than 1 percent) during the period.

With supportive government policies and substantial public investments through various projects,¹⁴ fish farming in Kenya started taking off in the mid-2000s, resulting in a rapid growth of aquaculture production, from 1 000 tonnes (less than 1 percent of total fish production) in 2006 to 24 000 tonnes (13 percent) in the mid-2010s (Figure 4).¹⁵ While the adjustment after the rapid growth reduced production to 12 000 tonnes in 2017, the country was still one of the fastest-growing aquaculture countries in the new millennium, and the over 20 percent annual aquaculture growth during 2000–2017 was twice as high compared to Africa as a whole (Figure 5).



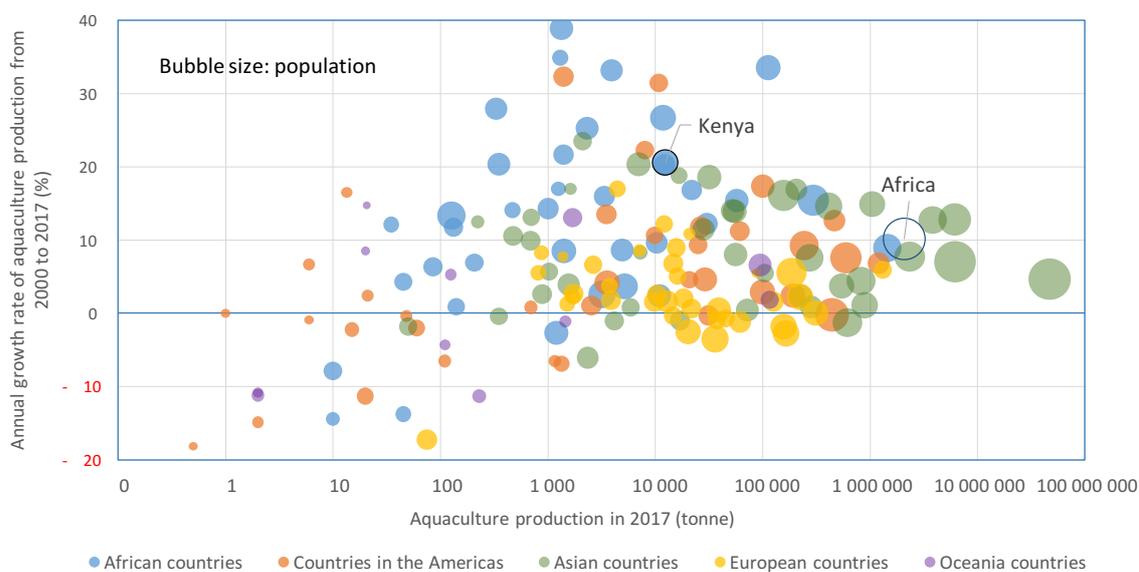
FIGURE 4 – Contribution of aquaculture to fish production in Kenya



Data source: FAO Global Fishery and Aquaculture Production Statistics v2019.1.0, published through FishStatJ (March 2019; www.fao.org/fishery/statistics/software/fishstatj/en).

Note: Constructed by the FAO WAPI Aquaculture Production Module (WAPI-AQPRN); see Figure 5.1 in WAPI-AQPRN v.2018.1 for a prototype. www.fao.org/fishery/statistics/software/wapi/en. Production excluding aquatic plants.

FIGURE 5 – Aquaculture production growth during 2000–2017: a global overview



Data source: FAO Global Fishery and Aquaculture Production Statistics v2019.1.0, published through FishStatJ (March 2019; www.fao.org/fishery/statistics/software/fishstatj/en).

Note: Constructed by the FAO WAPI Aquaculture Production Module (WAPI-AQPRN); see Figure 2.1 in WAPI-AQPRN v.2018.1 for a prototype. www.fao.org/fishery/statistics/software/wapi/en. Production excluding aquatic plants.

OUTLOOK

The Kenya Vision 2030, a long-term development blueprint launched in 2008, aims to transform Kenya into a “newly industrializing, middle-income country providing a high quality of life to all its citizens by 2030 in a clean and secure environment”. With increasing recognition of the benefits of fish as a vital source of essential macro- and micronutrients, nutrition education programmes in Kenya, such as the Eat More Fish Campaign, are devoted to teaching non-fish eating tribes the benefits of eating fish. The implementation of the recently published “National Guidelines for Healthy Diets and Physical Activity” will foster dietary shifts and behavioural changes towards inclusion and consumption of an adequate amount of fish in diets for better nutrition and health outcomes across the population.¹⁶

As discussed above, Kenya’s domestic fish production has been a primary factor affecting its fish consumption; that is, an increase (or decrease) in its domestic fish production would tend to drive up (or down) its per capita fish consumption (Figure 3). The downward trend of the country’s wild fish production (declined from nearly 170 000 tonnes in 2014 to a little over 120 000 tonnes in 2017; Figure 4) indicates that capture fisheries may not be able to lend much support to maintaining its already very low fish consumption. The decline of its fish imports from 36 000 tonnes (product weight) in 2006 to 23 000 tonnes (product weight) in 2016 indicates that relying on imported fish to feed the growing population would also not be a viable solution.¹⁷ The reliance on fish imports tends to become increasingly unfavourable, as less expensive imported fish products (e.g. frozen tilapias) put competitive pressures over domestic fish production industries.

Therefore, it is widely acknowledged that aquaculture has an important and increasing role to play in enhancing food security and nutrition in Kenya through increased fish consumption. For example, the “Big Four Agenda” (i.e. Kenyan government’s strategic agenda for 2018–2022) recognizes food security as one of its pillars and the significant role of aquaculture in supporting the “Food and Nutritional Security Pillar”. In addition to directly supplying high-quality food, sustainable aquaculture development would also contribute to improving food security and nutrition in Kenya through employment opportunities, income generation and other social benefits.¹⁸

In 2030, Kenya’s population is expected to reach 67 million,¹⁹ which means that the country would need around 270 000 tonnes of fish to maintain its per capita fish consumption at the level of the early 2010s (i.e. 4 kg/year; Figure 3). Even if Kenya can stabilize its wild fish production at the 2017 level (i.e. 120 000 tonnes; Figure 4), farmed fish production in the country would need to reach 150 000 tonnes in 2030 in order for its domestic fish supply to satisfy the 270 000 tonnes fish demand. Given the country’s 12 000 tonnes of farmed fish production in 2017, it would entail a 21 percent annual aquaculture growth during 2017–2030 to raise the farmed fish production to 150 000 tonnes in 2030.

In order to boost its per capita fish consumption to 10 kg/year (i.e. the African average in the early 2010s) in 2030, Kenya will need 670 000 tonnes of fish to feed the 67 million population in 2030. Given the 120 000 tonnes of wild fish production, its farmed fish production would need to reach 550 000 tonnes in 2030, implying a 34 percent annual aquaculture growth needed during 2017–2030.

While Kenya has achieved over 20 percent annual aquaculture growth during 2000–2017, maintaining a high growth rate would tend to be increasingly difficult because even with the same amount of increase in aquaculture production, the country’s aquaculture growth rate would tend to decline as the production base becomes bigger.

The Third Medium Term Plan (MTP III) 2018–2022 of Vision 2030 identifies the Blue Economy (including the fisheries and aquaculture sector) as one of the priority areas with high potential to spur inclusive economic growth and development in Kenya. The enabling policy environment has attracted substantial public funding for aquaculture development in the country – e.g. an eight-year (2018–2025), USD 143.3 million Aquaculture Business Development Programme led by the International Fund for Agricultural Development (IFAD).²⁰ Yet, more public and private investments are needed to unleash Kenya’s full potential in aquaculture for improving the country’s food and nutrition status, and deliberate efforts must be made to create an enabling environment for both public and private investments in the industry, taking into consideration the current devolved governance structure. Future food policies should continue to include aquaculture in the context of coherent linkages between production, supply, and consumer demand and access, to ensure better nutrition outcomes.

ACKNOWLEDGEMENTS

The policy brief benefits from data and information provided by WAPI data analysis tools and other WAPI products.²¹ Alice Jesse, Julius O. Manyala, Beatrice Nyandat, Lauren Phillips and Beth Wagude are acknowledged for their highly valuable review of the policy brief.

Notes

- 1 Kenya Bureau of National Statistics (KNBS). *Economic survey 2018*. Nairobi, Kenya.
- 2 See www.fao.org/countryprofiles/lifdc/en.
- 3 Unless specified otherwise, data in 2013 (the latest year when FAO Food Balance Sheets data are available) are used to represent the situation in the early 2010s. Correspondingly, data in 1993 are used to represent the situation in the early 1990s.
- 4 Unless specified otherwise, data/statistics on food and nutrition (including charts) used in this brief are from: FAO. 2018. World Aquaculture Performance Indicators (WAPI) – Fish Consumption Module (WAPI-FISHCSP v.2018.1). In FAO Fisheries and Aquaculture Department [online]. Rome. Updated 2018. www.fao.org/fishery/statistics/software/wapi/en.
- 5 Kenya Bureau of National Statistics (KNBS). 2018. *Basic report on well-being in Kenya*. Nairobi, Kenya. (also available at www.knbs.or.ke/download/basic-report-well-kenya-based-201516-kenya-integrated-household-budget-survey-kihbs).
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- 10 Coletta, J.M., Bell, S.J. & Roman, A.S. 2010. Omega-3 fatty acids and pregnancy. *Rev Obstet Gynecol*, 3(4): 163–71. (also available at www.ncbi.nlm.nih.gov/pmc/articles/PMC3046737).
- 11 FAO fact sheet on fish and human nutrition: www.fao.org/fileadmin/user_upload/newsroom/docs/BlueGrowthNutritionRev2.pdf.
- 12 See a previous WAPI policy brief on “Fish as a Poor People’s Food” for a global overview of the contribution of fish to animal protein. *FAO Aquaculture Newsletter* 58, pp. 49–51. (also available at www.fao.org/3/i9200en/i9200EN.pdf).
- 13 Unless specified otherwise, fish production (or supply), consumption (or demand), and trade are measured in live weight equivalent.
- 14 Ngugi, C.C., Nyandat, B., Manyala, J.O. & Wagude, B. 2017. Social and economic performance of tilapia farming in Kenya. In J. Cai, K.K. Quagrainie & N. Hishamunda, eds. *Social and economic performance of tilapia farming in Africa*, pp. 91–111. FAO Fisheries and Aquaculture Circular No. 1130. Rome, FAO. (also available at www.fao.org/3/a-i7258e.pdf).
- 15 Unless specified otherwise, data/statistics on aquaculture or capture fisheries production used in this brief are from: FAO. 2019. FAO Global Fishery and Aquaculture Production Statistics v2019.1.0, published through FishStatJ (March 2019; www.fao.org/fishery/statistics/software/fishstatj/en).
- 16 Ministry of Health, Republic of Kenya. 2017. *National guidelines for healthy diets and physical activity*. Government of Kenya, Nairobi. (also available at <http://nak.or.ke/wp-content/uploads/2017/12/NATIONAL-GUIDELINES-FOR-HEALTHY-DIETS-AND-PHYSICAL-ACTIVITY-2017-NEW-EDIT.pdf>). See also: FAO. 2018. *Food-based dietary guidelines – Kenya* (www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/kenya/en).
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- 20 See www.ifad.org/en/web/latest/news-detail/asset/40339050.
- 21 See www.fao.org/fishery/statistics/software/wapi/en.

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